

1980 Highly Scalable Software-Based Architecture For Communication And
Cooperation Among Distributed Electronic Agents

ABSTRACT

1985 A highly flexible, software-based architecture is disclosed for
constructing distributed systems. The architecture supports cooperative
task completion by flexible, dynamic configurations of autonomous
electronic agents. Communication and cooperation between agents are
brokered by one or more facilitators, which are responsible for matching
requests, from users and agents, with descriptions of the capabilities of
other agents. It is not generally required that a user or agent know the
1990 identities, locations, or number of other agents involved in satisfying a
request, and relatively minimal effort is involved in incorporating new
agents and "wrapping" legacy applications. Extreme flexibility is
achieved through an architecture organized around the declaration of
capabilities by service-providing agents, the construction of arbitrarily
1995 complex goals by users and service-requesting agents, and the role of
facilitators in delegating and coordinating the satisfaction of these goals,
subject to advice and constraints that may accompany them. Additional
mechanisms and features include facilities for creating and maintaining
shared repositories of data; the use of triggers to instantiate commitments
2000 within and between agents; agent-based provision of multi-modal user
interfaces, including natural language; and built-in support for including
the user as a privileged member of the agent community. Specialized
embodiments providing enhanced scalability are also described.